Currency Wars in the Advanced World. Resisting Appreciation at a Time of Change in Central Banking Monetary Consensus

UNIVERSITÀ DEGLI STUDI DI TORINO

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Resisting Appreciation at a Time of Change in Central Banking Monetary Consensus

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Abstract

The purpose of this paper is to consider certain consequences of large post-crisis capital flows in advanced economies. Specifically, I offer an examination of the Swiss response to large capital inflows during the early stages of the global financial crisis. Why did the Swiss National Bank (SNB) intervene in the forex market and introduce an exchange rate floor? Why did the SNB gamble with its highly valued anti-inflationary reputation in attempting to stem the appreciation of the Swiss franc? To answer these questions, this paper suggests a broader and more complete explanation than one that focuses solely on the configuration of domestic interests. Specifically, the paper argues that a thorough explanation of the SNB's response requires accounting for the changing monetary paradigm of the central banking community. This emerging monetary paradigm influenced the SNB's policy decisions by making the SNB particularly sensitive to financial stability risks and by providing it with the policy space to experiment with (macroprudential) tools to manage these risks.

Keywords: currency wars; monetary policy; exchange rate policy; central banking; ideational change; Switzerland.

1. Introduction

In September 2010, Brazilian Finance Minister Guido Mantega coined the term "currency war" after the first wave of quantitative easing in the United States led to what he regarded as a protectionist devaluation of the US dollar against other currencies. As the easing of monetary policy in the advanced world encouraged massive capital flows toward more profitable investment opportunities, several emerging market countries found themselves in the difficult position of coping with the financial instability and macroeconomic consequences associated with large capital inflows.[i] In this context, renewed attention has been devoted to determining the appropriate policy mix that national authorities should adopt to address capital surges and volatility (IMF, 2012b; Ostry et al., 2011). Political economy scholars have grown increasingly interested in examining the policies adopted by emerging market countries in such situations,

including previously neglected policies, such as capital account regulations (Gallagher, 2011; Gallagher, Griffith-Jones and Ocampo, 2011).

Although the scholarly debate on the effects of post-crisis capital volatility has thus far focused on emerging market countries, the global financial crisis has also affected several advanced economies. The exodus of investment from the sluggish economies of the United States and Europe and the quest for safe-haven assets that followed the deterioration of the crisis in the Eurozone have pushed capital flows toward several advanced economies. This inflow has led to sharp appreciations of the Australian dollar, the Swiss franc, and the Japanese yen, among others. In other words, the currency war Mantega foresaw has not been confined to emerging market countries.

The purpose of this paper is to consider certain consequences of large post-crisis capital flows in advanced economies. I offer an examination of the Swiss response to the capital inflows that have flooded the country since the beginning of the global financial crisis. Specifically, I examine the decision of the Swiss National Bank (SNB) to openly intervene in the foreign exchange (forex) markets to stem the appreciation of – and to explicitly cap – the Swiss franc as its main monetary policy objective since 2011.

The SNB exchange rate policy is puzzling in a number of respects. First, the SNB had stopped targeting the exchange rate in the 1990s, which was consistent with most advanced economies, as domestic authorities grew increasingly skeptical about the efficacy of forex interventions (also Bordo and Schwartz, 1991; Neely, 2011: 309). Furthermore, the SNB's response entails serious risks for the conduct and credibility of its monetary policy. In particular, as will be discussed below, accumulating foreign reserves to prevent domestic currency appreciation expands the domestic money supply and generates inflationary pressures, particularly if the intervention is not appropriately sterilized. Forex intervention also creates risks to domestic financial stability. Indeed, increases in central bank foreign assets almost always expand the balance sheet of the banking system. This expansion can support booms in credit and asset prices that may be followed by collapses (Moreno, 2011).

In spite of these risks, why did the SNB decide to intervene in the forex market and shift from its long-standing floating exchange rate policy to an exchange rate floor? Why did it decide to gamble with its highly valued anti-inflationary reputation; a reputation which, before the financial crisis, the SNB openly regarded as its "most important capital" (Baltensperger, Hildebrand and Jordan, 2007: 20)?

This paper suggests a broader and more complete answer to these questions that does not focus solely on the configuration of domestic interests or on the institutions that allow those interests to influence exchange rate policies (e.g., Bearce, 2003; Broz and Frieden, 2001; Frieden, 1991; Henning, 1994; Kinderman, 2008; Walter, 2008). Although the economic interests of the Swiss export sector – whose international competitiveness was damaged by the appreciating Swiss franc – were certainly important in the political debate that surrounded the SNB's monetary decisions, I argue that a thorough explanation of the SNB's response also requires consideration of the features that are specific to central bank decision making. In particular, this explanation must take into account the unraveling of the pre-crisis monetary policy consensus in the international central banking community and the ongoing debate over what monetary policy actually entails. This debate influenced the SNB's policy decisions by making it particularly sensitive to the growing risks in its financial sector. The unraveling of the pre-crisis monetary consensus also offered the central bank the policy space to test new policy instruments with which to manage the potential risks associated with its exchange rate policy.

Prior to 2007-08, the established view in central banking circles was that monetary policy should focus almost exclusively on price stability. After the onset of the crisis, however, this limited understanding of monetary policy was questioned, and increasing attention has been devoted to "the restoration of financial stability policy to co-equal status with monetary policy" (Bernanke, 2011). While the principle of bringing financial stability 'up to par' with monetary stability is almost unquestioned in the post-crisis environment, the debate is still open on the instruments through which financial stability can be ensured. In this context, the space for experimentation with new policy tools has expanded in that the policy rate is no longer considered the only instrument that a central bank can use. As a result, macroprudential (MPR) measures are now also included in the policy toolkit that monetary authorities are expected to use. The

expectation to use MPR measures is particularly strong when there is incompatibility between the interest rate required for monetary policy objectives and that required for financial stability objectives. This incompatibility occurred in Switzerland when the exchange rate invalidated the interest rate as an available instrument to dampen persistent growth in credit volumes and was resolved consistent with the emerging central-banking consensus. Indeed, the SNB intervened in the forex markets and pegged its exchange rate, which meant it relinquished control of its monetary base. Simultaneously, however, it adopted MPR measures such as countercyclical capital requirements to offset the upward pressures on the availability of credit and housing prices.

In short, the modalities through which the SNB conducted its exchange rate policy reflect the ideational reconsideration that is occurring in the international central banking community. Based on a broader understanding of the scope of monetary policy than the understanding that dominated the pre-crisis period, the SNB heeded the lessons that the maintenance of financial stability is as critical as ensuring price stability and experimented MPR tools to complement interest rate policy in order meet the challenges that derive from the selected exchange rate strategy.

To support my arguments, I will trace the SNB's exchange rate policy decisions from early 2009 to 2012. This analysis is based on the public pronouncements of SNB officials and on the studies and press releases that the SNB issues as an institution. Accounts from the international and domestic financial press, in addition to the secondary literature, are also used to reconstruct the SNB's decision-making process.

By examining the way in which the SNB responded to the appreciation of the Swiss franc, this paper will make a number of important contributions to the literature on this special matter. First, by illuminating the macroeconomic challenges that have confronted advanced economies as a consequence of post-crisis capital volatility, this paper offers comparative insights on the policy tools that different groups of countries employ when confronted with similar challenges. Indeed, the paper draws attention to an alternative set of unorthodox measures introduced in several emerging and developing economies next to the use of capital controls. Second, this paper advances the political-economy literature on the exchange rate by shifting

attention from the factors that influence governmental decision making to those that shape central bankers' preferences. Finally, this paper expands on the recent international political economy (IPE) literature that addresses the post-crisis changes in global financial governance by showing that the "macroprudentialist turn" influences not only the realm of financial regulation (Baker, 2012) but also the conduct of monetary policy. Although I am not arguing that the current debate among monetary authorities represents a lasting deviation from the pre-crisis monetary consensus, one of the contributions of this paper is to emphasize certain ideational aspects that have been subject to serious reconsideration since the crisis began.

Before proceeding, it is important to immediately clarify the specific aims of this paper. This study does not engage in testing the importance of competing domestic and international factors; I recognize the importance of the domestic impact of exchange rate movements on the decision to intervene. I intend to assess whether features that are specific to central banker decision-making processes played a role in how the SNB decided to intervene and, in particular, which strategies it used to manage the monetary dilemmas that derive from the selected exchange rate policy. Thus, instead of denying the importance of all the domestic factors that influenced the SNB's policy-making process, the purpose of the paper is instead to draw attention to an understudied aspect of the central bank's exchange rate policy: the influence exerted (and the room of maneuver allowed) by the predominant monetary paradigm espoused by the international central banking community.

For the purposes of this study, intervention is defined as central bank purchases of foreign currency (against the local currency) to influence exchange rates. I consider only the practice of buying– and not selling – foreign currency because I examine a case of forex intervention aimed at stemming appreciation rather than depreciation.[ii] Finally, although the case study could be interpreted as an example of the use of monetary power (Kirshner, 1995), this study does not investigate the multilateral consequences of the Swiss forex intervention.

The paper is organized as follows: in the next section, I review the economic rationale for forex interventions and the political-economy factors that influence them. I will then introduce my argument and discuss the tenets of the post-crisis debate in the central banking community compared to the pre-crisis monetary policy consensus. The section provides empirical evidence to support my arguments. I first illustrate the SNB's response to the appreciating Swiss franc, and then I deepen my analysis by showing how the SNB's response reflected the basic tenets of the post-crisis debate on the scope of monetary policy. This response will be compared to past Swiss experience with similar macroeconomic challenges during the late 1970s. The last section concludes by summarizing and reflecting on the findings.

2. To intervene or to not intervene? The risks of foreign exchange interventions

As opposed to developing and emerging market economies, which undertake frequent operations in their forex markets (Adler and Tovar, 2011), major developed economies stopped engaging in such active interventions in the 1990s (Bordo, Humpage and Schwartz, 2012b). The evidence that intervention, particularly sterilized intervention, was ineffective, except in the very short run, helped nurture a general orientation against exchange rate intervention among economists and policymakers in advanced economies (Truman, 2003).[iii]

The opposition to the use of forex interventions may also be explained by the risks that this policy entails. Although national authorities enjoy more operational flexibility in addressing currency appreciation than depreciation,[iv] official interventions to stem appreciation entail two main risks for monetary policy and for the central bank's anti-inflationary reputation and credibility.

First, forex intervention risks expanding the domestic money supply and generating inflationary pressures. Even when monetary authorities rely on sterilization to nullify the effects of intervention on prices and interest rates, sterilization is costly to implement and is not easy to achieve in practice.[v]

Furthermore, in the Swiss case, the SNB has largely intervened through non-sterilized operations to amplify the devaluation effects of its interventions. An inevitable consequence of these operations has been to expand the domestic money supply, which raises the specter of inflationary pressures that might damage the export sector by making it less competitive internationally.[vi]

Second, accumulating forex reserves to depreciate the currency also poses risks to domestic financial stability. Indeed, increased bank lending resulting from ineffective sterilization creates incentives for financing excessive investment in certain sectors, such as the equity and property markets. Furthermore, excess liquidity might make banks excessively accommodating of the demand for such credit (Mohanty and Turner, 2005: 66). Excess liquidity can support booms in credit and asset prices that are followed by collapses in those same prices (Moreno, 2011). Official interventions can thus create distortions in the financial sector.

In short, official intervention (particularly when sizeable and prolonged) risks weakening domestic macroeconomic performance because of higher inflation and distortions that are introduced into the financial system. These side effects of intervention, or "collateral damages" (Truman, 2003: 248), present a serious threat for monetary authorities: they call into question the credibility that has been the main ideological basis to justify central bank independence (Grabel, 2003).

Despite these considerations, the political-economy literature on exchange rate politics suggests there are powerful political factors that influence the decision to intervene to depreciate the exchange rate (e.g., Bearce, 2003; Broz and Frieden, 2001; Frieden, 1991; Henning, 1994; Kinderman, 2008; Walter, 2008). In particular, because currency appreciation may undermine the competitiveness of the tradable sector, interest groups and voters that are the most vulnerable to an increase in the value of the domestic currency will demand depreciation. Export-oriented groups thus tend to favor a depreciated currency. Similar demands will be raised by private banks whose profitability depends on the international competitiveness of the same export groups; the quality of bank loan portfolios could be seriously impaired

by corporate failures resulting from an overvalued currency that erodes competitiveness (Henning, 1994: 29).

Domestic institutions can mitigate or intensify the influence of the demands for depreciation from the most vulnerable actors. For instance, domestic mechanisms that reduce the number of private sector voices facilitate the communication of bank industry preferences to government officials (Henning, 1994). Liberalizing the capital account is another mediating factor that tends to exacerbate the distributional impact of exchange rate movements. In particular, capital account openness has increased the politicization of exchange rate policy (Frieden, 1994), and polarization maximizes the influence of the demands of the most vulnerable domestic actors.

The research reviewed thus far has revealed important factors that influence national authorities' responses to the challenge of an appreciating currency. However, it is important to note that this academic debate has been overly focused on the formation of preferences and actual decision making of elected policymakers. Nevertheless, in the case under investigation, the focus is not on policymakers' motivations to manage the exchange rate but rather on the decisions taken by the central bankers who are entrusted to conduct exchange rate policy.[vii]

Thus, we must know more about how central bankers operate and the factors that shape their decisions. In this spirit, the paper shifts its attention to the features that are specific to central bankers' decision making and, in particular, to the views that inform the operational conduct of monetary policy (c.f. Widmaier, 2007). In short, if we want to understand why the SNB adopted policies that were potentially risky for macroeconomic and financial stability (and for the central bank's own reputation), we cannot focus solely on societal preferences; instead, we must consider how central bank preferences are formed.

3. The transnational community of central bankers and the debate over the scope of monetary policy and its tools

Several studies in the IPE literature have shown that central bankers are aptly described as a transnational epistemic community, i.e., a knowledge-based group of monetary experts who share common views about the goals to which monetary policy should be directed and common views about the instruments that may be employed to achieve these goals (McNamara, 1998; Verdun, 1999; Baker, 2006; Marcussen, 2006; Johnson, 2013). An important strand of this literature has demonstrated how the ideas developed by this expert community influences policymakers' decisions under specific conditions. Within this research agenda, significant scholarship has also been devoted to identifying the channels and mechanisms that enhance central bankers' influence on domestic policymakers, ranging from the management of policy failures to the use of technical rationality (c.f. McNamara, 1998; Abolafia, 2012).

Another strand of the literature has focused on the community of central bankers itself. That is, instead of focusing on how the community of experts has influenced a specific target audience, scholars have focused on the factors that help explain the formation of common preferences and behaviors among the members of the community. Examining the emergence of common views inside this community has helped explain such puzzling outcomes as the formation of highly politically divisive international financial agreements (Kapstein, 1992) and the remarkable diffusion of the principles of central bank independence and price stability (Johnson, 2013).

To explain how such common views emerge and how they influence central bankers' operational practices, research has focused on a number of characteristics that pertain to the decision-making context of central bankers, including technicality, transnationality, and political insulation.

Technicality stresses that membership in the central banking community is defined more by scientific knowledge than by territorial boundaries (Marcussen, 2009). Thus, members of the community share a common analytical toolkit through which they interpret economic reality and transcend their separate national identities in favor of a transnational identity (also Baker, 2006). This common knowledge is, in turn, heavily influenced by repeated interactions and academic research on macroeconomic and

monetary policy that reinforce the sense of belonging to a community of technical experts. As one former Fed official recalled, in meetings with other countries' colleagues, "we were a rather like-minded group dealing with similar problems and trained in a central-bank culture that seems to encourage mutual respect for colleagues and took the hard edge off any aggressive tendencies" (Axilrod, 2011: 103). The decision-making context in which central bankers operate is also characterized by a large degree of political insulation from domestic societal pressures. Over the past two decades, this insulation has been increasingly institutionalized as the idea of central bank operational independence in the conduct of monetary policy has diffused throughout developed and developing countries alike (c.f. Maxfield, 1997). This context has fostered an "intimate level of trust and cooperation within the community of central banks" (Trichet, 2008).

The characteristics of the environment in which central bankers have traditionally operated are particularly important to the questions addressed in this paper because they illuminate the development of a remarkable degree of homogeneity in central banks' views and operational practices despite domestic differences. Belonging to a community in which like-mindedness is rewarded and respected and in which members are less responsive to political pressures than other branches of government, central bankers are unlikely to depart considerably from the economic guidelines that are regarded as appropriate by the other members of the community. Regular and intensive interactions, a desire for reputation and esteem, similar training, and common educational and professional backgrounds reinforce the influence of socialization mechanisms over the application of coercive power because intra-community interactions occur among similarly situated individuals (Johnson, 2013; Baker, 2012).

In this idiosyncratic context, the views and beliefs common to the members of the community at a specific point in time can hardly be ignored as an explanatory factor in analyses that seek to unveil the actions of domestic central banks – particularly under crisis conditions – as acknowledged by central bankers themselves. Indeed, the common views nurtured during times of normality "provide the infrastructure to facilitate the prompt implementation of collective policies in periods of severe 'financial stress'" (Ortiz Martìnez, 2009: 296; also Trichet, 2008).

The influence of shared beliefs in the central banking community was particularly evident in the conduct of monetary policy during the pre-crisis period. As the Fed chairman Ben Bernanke (2011) highlights, "during the two decades preceding the crisis, central bankers and academics achieved a substantial degree of consensus on the intellectual and institutional framework for monetary policy". Specifically, before the crisis in 2007, the established view was that monetary policy should exclusively target price stability and that price stability was a sufficient condition to ensure financial stability.[viii]

One of the policy consequences of this view is the diffusion of (variably flexible) inflation-targeting frameworks intended to induce policymakers in both developed and developing economies to make sensible monetary policy decisions (Gòmez-Mera, 2011; Martìnez, 2009: 85).[ix] Even central banks that do not consider themselves to be primarily targeting inflation, such as the European Central Bank (ECB) and the Swiss National Bank, have nonetheless incorporated key features of this policy framework, which includes a numerical definition of price stability, a central role for communications about the economic outlook, and a willingness to accommodate short-run economic stabilization objectives as long as these objectives do not jeopardize the primary goal of price stability (Issing, Gaspar, Angeloni and Tristani, 2001; Baltensperger, Hildebrand and Jordan, 2007).

The pre-crisis overwhelming concern with inflation contributed to the development of a narrow understanding of monetary policy. Specifically, it was widely believed that it was not monetary policy's purpose to address potential asset bubbles that could destabilize the financial system. Of course, this does not indicate that financial stability was not a concern of central banks before the onset of the recent crisis. However, the predominant view of the time was that financial stability "cannot be defined in terms other than broad and general ones that give little guidance on policy or action, and indeed that it could even be dangerous so to do" (Davies and Green, 2010: 61).

This view was most evident in the so-called "Greenspan doctrine" named after the former Chairman of the US Federal Reserve according to whom monetary policy should not "lean" against a growing bubble, whether it was in the equity or real estate markets (Greenspan, 2002). Thus, monetary

policy should not be influenced by financial stability considerations; instead, price stability should be the focus of one policy instrument: the short-term policy interest rate.

The recent crisis, however, has tested the tenets of the pre-crisis monetary consensus and triggered a lively debate about the scope of monetary policy and the instruments through which to achieve its goals. Importantly, the crisis revealed that an excessively expansionary monetary policy fueled financial instability.[x] Furthermore, the crisis showed that financial stability was not guaranteed even when monetary policy (as measured by the criterion of price stability) was successful.

In the climate of economic struggle encouraged by the crisis, the assumed separation between monetary and financial stability policy has become the subject of debate (Davies and Green, 2010: 38). This shift is particularly evident in the public pronouncements of central bank officials in advanced economies. For instance, the Fed chairman has repeatedly argued that central banks should see the maintenance of financial stability as coequal with their responsibilities for the management of monetary policy (Bernanke, 2013, 2011), a point that has been echoed by the chairman of the Basel Committee on Banking Supervision, who has posited, "the financial crisis has made it clear that the monetary policy framework needs to be developed so that it takes greater account of the importance of financial stability. … and that monetary policy and financial stability policy must be coordinated to an even greater extent than before" (Ingves, 2013).

The increased attention to financial stability as part of the central bank's monetary mandate is well illustrated by the IMF conference on rethinking global macroeconomic policy that convened in the spring of 2013.[xi] Indeed, one of the underlying questions of the conference was how central bankers can be sure they are not "running the risk of reigniting the problems that led to the financial crisis in the first place", in the words Charlie Bean, deputy Bank of England governor (as reported in the Financial Times, Central bankers say they are flying blind, 17 April 2013). Central bankers thus have debated the validity of pre-crisis monetary policy targets and instruments. Although no member of the central banking community called for a complete rejection of the pre-crisis conventional wisdom, it was repeatedly noted that the inflation-

targeting framework is no longer a monetary policy approach that is capable of addressing both macroeconomic and financial challenges (Bini Smaghi, 2013). Furthermore, it was widely acknowledged that one of the most important lessons of the crisis is that a monetary policy that is exclusively focused on achieving long-run price stability raises questions about how central banks can effectively meet their overall macroeconomic objectives. In particular, the crisis has raised the question of how a central bank can manage the trade-off between keeping output in line with potential output and inflation on target in the near term (i.e., the pre-crisis monetary policy objective) and ensuring the soundness of the financial system in the medium term (King, 2013).

In short, although this debate does not suggest that the pre-crisis monetary consensus has been abandoned, it does suggest that there is a growing awareness among the members of the central banking community that their policies should simultaneously secure monetary and financial stability.[xii] Even those central bankers that continue to adhere to the view that a central bank has no instruments for targeting asset prices have admitted that the pre-crisis consensus "has a problem" and that restricting the role of the central bank to be completely passive during the expansion of a bubble represents an asymmetric approach that could lead to moral hazard problems (Issing, 2011, 6; also King, 2012).

In spite of the largely accepted principle that financial stability should complement monetary stability as a goal that the central bank pursues, a more controversial issue in the current debate is to determine which policy instruments – in addition to short-term interest rates – central banks can deploy to "lean" against the wind of asset price booms. One of the most vocal actors in this debate has been the Bank for International Settlements (BIS) – also known as the central bankers' bank. Well before the crisis, the BIS advocated measures to counter the risks that were amassing in the financial sector (Borio and White, 2004; Borio, Furfine and Lowe, 2001; for an overview see Baker, 2012).[xiii] In particular, the BIS has suggested that increased attention needs to be devoted to the tools that may supplement the traditional policy interest rate by addressing the pro-cyclical dynamics of the credit market and strengthening financial resilience (Committee on the Global Financial System, 2010; Financial Stability Board, Bank for International Settlements and International Monetary Fund, 2011; White, 2009). These tools, which are categorized as

MPR measures, include primarily prudential tools that are designed to target one or more sources of systemic risk, such as excessive leverage in the financial sector, liquidity mismatches, excessive reliance on short-term funding, and interconnectedness.

After the crisis, the policy tools advocated by the BIS have become a buzzword in international regulatory circles leading the Director of Research at the BIS to note that 'We are all Macroprudentialists now' (as quoted in Baker, 2012, 118). In particular, MPR tools have started to be regarded as "the first lines of defense … to mitigate the risk of financial excesses", to use the words of the former Bank of Canada Governor (Carney 2013), or as tools that effectively address the shortcomings of the single instrument of the short-term policy interest rate, in the words of the former ECB Vice President (Papademos 2009). This argument has also been forcefully supported by the former Chairman of the SNB, Philip Hildebrand, who has been a supporter of a tougher capital and leverage ratio (Tom Braithwaite and Patrick Jenkins, Finance: Balance sheet battle, Financial Times, 14 August 2013). The international central banking community has also institutionalized some of these MPR measures into formal rules that are expected to guide the conduct of domestic monetary authorities. Specifically, countercyclical capital buffers (CCB) were introduced in the 2010-11 reformed international regulatory framework for banks (known as the Basel III Accord). These measures have been repeatedly described as strong examples of a MPR approach (Basel Committee on Banking Supervision, 2010).

In short, after the crisis, the division between monetary and financial stability has been blurred. In particular, it has become increasingly common to conceive of a monetary policy beyond price stability. The conception of an appropriate monetary policy toolkit has also been expanded by according increased consideration to MPR instruments that may help counter the systemic challenges of financial instability. This emerging and new understanding of the scope of monetary policy and its tools has been reflected in the SNB's decision making, which has rendered it particularly sensitive to the risks of domestic financial stability that derive from its exchange rate choices. In a context in which short-term policy interest rate was no longer an available policy option, the emerging view of monetary policy also offered the central bank the policy space to experiment new policy instruments through which to mitigate the potential negative

consequences deriving from its response to the appreciating Swiss franc, as is discussed in the following sections.

4. Resisting appreciation: the SNB's exchange rate policy

4.1 Foreign exchange interventions and pegged exchange rates

The SNB, as the central bank of Switzerland, has a statutory mandate to pursue a monetary policy that serves the interests of the country as a whole. This mandate is enshrined in the Constitution and the National Bank Act (NBA). The NBA (article 5 paragraph 1) clarifies the scope of the SNB's mandate and specifies that the SNB "shall ensure price stability". When ensuring price stability, the SNB "shall take due account of the development of the economy". In addition to being enshrined in the NBA, the requirement to ensure price stability has been further specified in the SNB's monetary policy strategy, which has been in force since 2000. The SNB equates price stability with a rise (or decline) in the national consumer price index of less than 2% per year (Swiss National Bank, 2012b).[xiv] The responsibility of setting the exchange rate of the domestic currency is also a responsibility of the SNB.[xv] Even though in several countries, central banks have only shared or partial responsibility over the exchange rate (most notably in the United States), the SNB has almost full responsibility in Switzerland (Archer and Bingham, 2009: 31).

In addition to the monetary function, the National Bank Act also gives the SNB the mandate to contribute to the stability of the financial system. The SNB performs this task by analyzing sources of risk to the financial system, by overseeing systemically important payment and securities settlement systems, and by helping to shape the operational framework for the Swiss financial sector.[xvi]

It is notable that the SNB had not intervened in the forex market to stabilize the exchange rate since August 1995 (Bordo, Humpage and Schwartz, 2012b). Specifically, between the early 1980s and 2009,

the SNB's interventions on the forex market were extremely rare. Generally speaking, such actions involved very small amounts of currency as part of coordinated interventions by the central banks of the Group of Ten countries (Jordan, 2012)

This hands-off approach was drastically reversed in March 2009 when, following the escalation of the sovereign debt crisis in the Eurozone, capital rushed into Switzerland and pushed the value of the Swiss franc to an all-time high of approximately CHF 1.46 per euro. At that juncture, the SNB switched to more active management of the exchange rate to counter its appreciation (Swiss National Bank, 12 March 2009). Specifically, with short-term interest rates already reduced to practically zero, the SNB began purchasing foreign currency to stem the upward pressures on the Swiss franc and to prevent undesirable deflationary developments. The SNB's substantial forex purchases were not sterilized, at least not until April 2009 (also Bordo, Humpage and Schwartz, 2012a; IMF, 2012a). As a result, the Swiss monetary base increased by more than the value of the foreign assets on the SNB's balance sheet, which allowed for significant currency depreciation.[xvii]

The foreign currency purchases were suspended in June 2010. However, the appreciation of the Swiss franc accelerated during the last half of that year and continued throughout 2011. Specifically, the CHF/euro rate increased from 1.6 in late 2007 to almost parity in early August 2011, with a cumulative real effective appreciation of over 30% (IMF, 2012c: 5). Given the continued upward pressures on the Swiss franc, the SNB ultimately decided to intervene by setting an explicit floor on the exchange rate and abandoning the floating exchange rate regime. Indeed, on 6 September 2011, the SNB set a minimum exchange rate of CHF 1.20 against the euro by announcing that it was prepared to buy foreign currency in unlimited quantities to enforce this minimum rate.[xviii]

The accumulation of forex reserves to stem Swiss franc appreciation and to defend the newly introduced floor has resulted in a dramatic expansion of the SNB balance sheet. By the end of December 2012, the SNB had accumulated CHF427bn ($457bn) in overseas currencies, the fifth largest stockpile of foreign currency reserves in the world (Financial Times, Investors dump Swiss franc as euro rises, by Alice

Ross, 17 January 2013). The heavy inflows from the SNB's forex operations had not gone noticed. The remarks of the Governor of the Reserve Bank of Australia are telling; expressing his own discomfort with his domestic currency's strength, Governor Glenn Stevens, referring to the SNB, commented: "I never thought I would ever see such an anti-inflationary, conservative institution as that hold our currency as part of its reserves".[xix] Let us then try to understand how an anti-inflationary, conservative central bank managed the macroeconomic and reputational risks deriving from its exchange rate policy and the attendant loss of control over monetary policy.

4.2 Putting the SNB's response in context: domestic societal pressures and central banking monetary policy consensus

Although the SNB's accumulation of forex reserves might be interpreted as part of the central bank's investment policy, the SNB has strongly and repeatedly affirmed that its balance sheet expansion is nothing but the mirror image of its monetary policy decisions. In other words, the decision to intervene to weaken the currency was part of the central bank monetary policy to address deflationary risk (SNB 10 August 2011; 6 September 2011; Zurbrügg, 2012b).

Given the characteristics of the Swiss capitalist economy, it is not particularly surprising that the central bank's active approach to weaken the exchange rate was supported by domestic audiences (c.f. Fioretos, 2010). As a small, open economy with few natural resources and a heavy dependence on trade, the exchange rate is particularly important for Switzerland. Only a few multinationals, such as pharmaceutical and electrical equipment companies (such as Novartis and ABB), have the flexibility to transfer production to factories in different currency zones. Most Swiss companies do not have such flexibility (Financial Times, Business warns strong franc remains threat, by Haig Simonian, 6 September 2011).

Support for the central bank's decisions came primarily from business associations, such as the Swiss Business Federation (Economiesuisse) and the Association of Small and Medium Enterprises. For instance, in a press release from early December 2012, Economiesuisse hailed the SNB's protection of the minimum exchange rate with the euro as "an important support mechanism which in the current situation should under no circumstances be discontinued", although the business association continued to consider the selected exchange rate to be overvalued (Economiesuisse, 2012). In addition to business associations, support for the central bank's active approach to exchange rate management came from parties across the political spectrum. For instance, both the center-left Social Democrats and the center-right Christian Democrats backed the central bank's decision to set a threshold in the Swiss franc's exchange rate to ease the burden on Switzerland's export industry. The center-right Radical Party, which is traditionally close to the business community, also declared its confidence in the SNB. Even the right-wing Swiss People's Party, which initially strongly criticized the SNB, eventually stood behind the decision.[xx]

By contrast to the explicit support expressed for the SNB's exchange rate management, the opposition to a weakened currency was muted. One would have expected international investors, such as Swiss private banks, to favor a stronger currency to purchase overseas assets more cheaply (Frieden, 1994: 85). However, during the global financial crisis, the principal Swiss banks suffered severe losses, and their activities were severely criticized in both public and political debates. For instance, UBS lost $38bn on credit derivatives in the 2008 financial crisis (Financial Times, UBS Chief calls on "arrogant" bankers to change, by Patrick Jenkins and Lina Saigol, 10 January 2013, print edition) and has since been involved in a string of scandals including the rigging of Libor interest rates.

The configuration of domestic preferences favoring a weakened Swiss franc has certainly emboldened the SNB's response to the appreciating Swiss franc. Domestic factors are also important to take into account when determining why other policy options were not considered. For instance, interest rates had previously been lowered to the zero bound to support the domestic economy, and the constitutional debt brake rule ("Schuldenbremse") adopted in 2002 constrained the country's fiscal policy response. Other policy options, such as capital controls, were also ruled out because of the state of the

domestic economy. Specifically, controls "would likely have been difficult to enforce given the sophisticated financial sector, and would have hurt Switzerland's reputation as a global financial center" (IMF, 2012a: 6).

Despite the importance of domestic factors in the exchange rate decision making, an exclusive focus on these factors does not sufficiently explain the SNB's actions. In particular, domestic distributional considerations cannot explain why a conservative central bank opted for policies that entailed a loss of control over its monetary policy and significant risk to its reputation and credibility, which in Switzerland is regarded as the SNB's "most important capital – a capital that it is loathe to put at risk" (Baltensperger, Hildebrand and Jordan, 2007: 20). Furthermore, maintaining an anti-inflationary reputation was extremely important for a country in which the financial sector accounted for approximately 11.6% of GDP during the pre-crisis period (Swiss Bankers Association, 2010: 13).[xxi]

In light of these considerations, it is important to consider another set of factors, in addition to those regarding the domestic distributional impact of exchange rate movements. Indeed, the policy strategy that the SNB followed to mitigate the risks of its monetary and exchange rate policy goals strongly reflect the tenets of the emerging post-crisis monetary consensus in the international central banking community. The SNB was particularly aware of the financial stability implications deriving from its monetary policy and utilized MPR tools to solve the monetary dilemma posed by the exchange rate policy.

The first indications that financial stability was figuring prominently in the SNB's decision making (alongside its traditional concern with price stability) could be detected in the pronouncements of key SNB officials who invoked the lessons learned at the international level to justify domestic policy choices. In the words of Pierre Danthine (2012), one of the three members of the SNB Governing Board, "the dismal consequences of the recent global crisis … are stark reminders that we should … ensure that a similar crisis does not materialize in our country again". Consistent with the emerging international monetary debate, Swiss authorities forcefully argued that it was their responsibility to act not solely because of monetary developments (i.e., deflationary risks) but also because of financial sector developments. The developments in the mortgage and real estate markets were regarded as particularly worrisome. From

2009 to 2012, yearly growth rates of mortgage lending and real estate prices were approximately 5%, which is well above the average economic growth observed during recent years. The mortgage-lending-to-GDP ratio had also reached historical heights (also IMF, 2012a: 6). In this context, the monetary expansion associated with the exchange rate policy of depreciating the Swiss franc increased the risks of bubbles in housing and equity markets, leading Fitz Zurbrügg, another member of the SNB's governing board, to declare publicly that the SNB was seriously worried about developments in the domestic housing market compounded by the fight against overvaluation (as reported in Financial Times, Swiss banks on alert amid property boom, by James Shotter, 29 January 2013).

In addition to directing Swiss monetary authorities' attention toward the risks in the financial sector, the influence of the post-crisis international debate on the SNB's choices can also be detected in the domestic discussion of the most appropriate monetary policy tools to manage the trade-off between the exchange rate and the health of the financial system. In particular, the echo of the international debate on the need to expand the central bankers' toolkit beyond the short-term policy interest rate can be detected in the public stance of SNB officials. For instance, Danthine publicly questioned the almost exclusive reliance on the interest rate instrument (as was the case during the pre-crisis period) by the SNB to effectively perform its functions. In particular, Danthine (2012a) noted that there may be circumstances when using the interest rate to contain asset price may "lead to deviations from the interest rate path that would be optimally justified by the pursuit of the price stability mandate". These circumstances are embodied by the Swiss situation in which the exchange rate policy invalidates the interest rate as an available instrument for SNB's monetary purposes.

The central bank's concerns with the use of the short-term policy rate to address monetary and financial imbalances are not merely theoretical; reflecting the policy space opened up by the unraveling of the pre-crisis monetary debate in central banking circles, the SNB started experimenting a number of supplementary MPR measures. In a lecture taking stock of the monetary lessons of the crisis, Danthine (2012b) elaborated the thinking behind SNB operational practices. In particular, because "the impact of a high interest rate policy on the exchange rate would surely increase the associated output loss", he noted

that "it is therefore crucial that the Swiss authorities implement the most cost-effective measures to counter the financial excesses which may lead to a crisis". The measures Danthine refers to are MPR measures.

The MPR measures adopted in Switzerland were designed to provide monetary authorities with the flexibility to counter adverse developments in the domestic credit market and increase the "loss-absorbing capacity" of the domestic banking sector (Swiss National Bank, 2012a). To achieve these goals, countercyclical capital buffers were adopted – that is, a policy tool which, as discussed above, is now largely regarded as one of the strongest bulwarks against procyclical financial developments and have been institutionalized into the Basel III rules. However, whereas the Basel rules will become fully effective only in 2019, Switzerland adopted them in June 2012.[xxii]

Financial stability considerations also figured prominently in the SNB justification for the adoption of CCBs, which is consistent with the tenets of the post-crisis international monetary debate. In particular, the SNB appealed to concerns about the risks of cyclical imbalances that were evident in the domestic mortgage and real estate markets (Swiss National Bank, 2012a). The persistently low interest rate (which, as previously noted, is an indispensable part of the central bank's exchange rate policy) was also a key factor behind the adoption of CCBs.[xxiii] Given the commitment to the minimum exchange rate, the Chairman of the SNB Governing Board argued that "possible distortions in the growth of credit aggregates that could endanger financial stability should be managed, first and foremost, with the macroprudential toolkit" (Jordan, 2012).

The role of the international monetary consensus in the formation of the SNB preferences can also be illustrated by comparing the current Swiss situation with a similar historical experience. Indeed, this is not the first time the SNB has decided to weaken the domestic currency. In fact, the exchange rate floor announced in 2011 can be regarded as a return to the strategy adopted by the SNB in 1978 to prevent the appreciation of the CHF.

In the mid-1970s, the SNB had also become increasingly concerned about the level and speed of domestic currency appreciation.[xxiv] The central bank reacted by undertaking repeated interventions in the forex market. Restrictions on inflows of foreign capital were also introduced. Despite these measures, however, upward pressures on the exchange rate continued. Indeed – as in 2011 – short-term interest rates were previously set very low, and the SNB had little room for additional decreases to respond to the deflationary threat. In October 1978, the SNB introduced a floor on the exchange rate of the deutschmark with the Swiss franc. To defend the new exchange rate peg, the SNB was compelled to purchase foreign exchange on a large scale and to expand the monetary base.[xxv]

By contrast to current events, however, by the end of the 1970s, the SNB exchange rate policy was mainly assessed in light of its consequences for monetary policy, which was almost exclusively conceived of as a policy for achieving price stability (Peytrignet, 1999). [xxvi] Following the surge in the monetary base from the official purchases of foreign exchange required to halt the appreciation of the Swiss franc, "the SNB was well aware that the temporary surge in the monetary base might be followed by a new spurt of inflation" (Kohli and Rich, 1986: 923).

Inflation concerns were of course extremely real in the economic situation of the time. While the Swiss franc depreciated by 5% one month after the floor was introduced and continued to weaken afterwards, inflation spiked from less than 1% to 5% annually, peaking at approximately 7% in 1981 after the 1979 oil shock (IMF, 2012a: 3).

However, these developments were consistent with the prevalent international monetary consensus of the time, which might be summarized by the principles of monetarism, that is, the view that inflation is primarily a monetary phenomenon, that low and stable inflation has priority over other macroeconomic objectives, and that the main task of monetary authorities is to eliminate inflation by directly addressing its source – growth in the money supply. To achieve this goal, a new policy framework that explicitly targeted the rate of money growth to stem inflationary expectations became the focus of increasing attention in international central banking circles (Axilrod, 2011, p. 103-05). It is not feasible to

trace how this peculiar understanding of monetary policy and the attendant monetary framework gained the upper hand in the international debate in this paper; however, this view diffused well beyond the United States (where it was introduced under Fed chairman Volcker), and the pursuit of an anti-inflationary path became the foundation of central bank independence around the world.[xxvii]

In this context, although the SNB hoped that it could stabilize the exchange rate without jeopardizing price stability, it eventually prioritized the latter over the goal of defending the peg and resumed monetary targeting in 1979. Adherence to the contemporary consensus is explicit, for example, in the positions expressed by Fritz Leutwiler, President of the SNB from 1974 to 1985, who came to the conclusion that "central banks straying from the path of virtue sooner or later would be punished by a jump in the inflation rate" (in Kugler and Rich, 2001: 9).

As is the case today, in 1978, the SNB found itself in a situation that is familiar to scholars of the international financial trilemma. Under conditions of capital mobility, the commitment to a fixed exchange rate did not allow monetary authorities to rely on the policy rate to combat inflationary pressures.[xxviii] Interest rates of nearly zero put upward pressures on domestic prices, which led the SNB to prioritize price stability concerns. In 2011, however, the unraveling of the pre-crisis emerging international consensus on monetary policy suggested that the SNB use MPR tools to solve the incompatibility between the exchange rate choice and the policy rate and to slow down the rise of credit aggregates. In 1978, by contrast, the SNB ultimately opted for money supply targeting and abandoned the exchange rate target. Of course, this does not indicate that the Swiss monetary authority will not abandon the exchange rate peg today or that there are no other differences between the two periods. Furthermore, the comparison is not meant to gloss over the differences in the economic context that characterized the 1970s as compared to today's situation. More narrowly, however, this short review of the Swiss experience in the late 1970s suggests that the terms of the international monetary debate can hardly be ignored in explaining the formation of domestic central bank preferences. In particular, the dominant view of monetary policy in a technical, apolitical, and transnational community such as that of central bankers is likely to exert a significant influence on the operational practices of central banks. While in the 1970s, conservative policy-making views encouraged

the SNB to focus almost exclusively on price stability, in today's environment, the unraveling of the pre-crisis monetary consensus has provided the SNB with more space for experimentation to address both the price and financial stability implications of the selected exchange rate policy through the use of MPR tools.

6. Conclusions

The idea of a currency war is back in fashion. Guido Mantega may have been the first to revive memories of the Great Depression, when countries around the world engaged in "beggar-thy-neighbor" devaluations, but concerns about the growing politicization of exchange rate policy have been widespread (Financial Times, Weidmann warns of currency war risk, by Michael Steen, 21 January 2013), particularly after the Bank of Japan shifted to an ultra-loose monetary policy. Following the 2013 May announcement of the potential tapering of the US Fed asset purchase program, the threat of a currency war has assumed a new shape. As the currencies of several emerging market countries have weakened substantially, currency intervention programs have been part of the policy toolkit that governments and central banks have used to slow down the pace of depreciation.

This paper analyzes the exchange rate policy of one of the advanced economies that was hardest hit by the volatility of capital flows following the monetary easing of other high-income countries and the quest for safe-haven assets sparked by the deterioration of the Eurozone. In examining how Switzerland reacted to the challenge of the appreciating Swiss franc on the heels of large capital inflows, this paper contributes to this special issue by illustrating that capital controls have not been the only unorthodox policies adopted to manage capital volatility. Examining the unusual revival of forex interventions and the targeting of the exchange rate, this paper has also highlighted factors that shape central bankers' decision-making processes. Specifically, I argued and illustrated that a thorough explanation of the SNB's exchange rate policy requires taking into consideration the international intersubjective context in which central bankers are embedded.

Since the beginning of the crisis, a lively debate has shaken the monetary views of the "calm waters of central banking" (Davies and Green, 2010). If the predominant monetary consensus in the pre-crisis period was characterized by a strong and almost exclusive commitment to medium-term price stability, the experience of the crisis has cast doubt on the effectiveness of this limited understanding of the scope of monetary policy. In this context of ideational reconsideration, it has become commonplace to hear that an exclusive focus on price stability is not enough to ensure financial stability, and authoritative members of the international central banking community have even forcefully articulated the view that financial stability policy must be given co-equal status with monetary policy in central bankers' operational practices (Bernanke, 2011). This renewed attention to financial stability has also fueled the debate over which policy tools central banks can employ to perform their functions. In particular, increasing attention has been devoted to MPR measures to complement the pre-crisis reliance on short-term policy rates. In short, although the debate remains open on the instruments through which to bring financial stability 'up to par' with monetary stability, the post-crisis agreement on the need to expand the scope of monetary policy has opened up space for policy experimentation in central banking operational practices.

This policy experimentation is particularly evident in the Swiss case and in the modalities through which the SNB managed the macroeconomic and reputational challenges that accompanied its exchange rate policy. Indeed, having lost its control over the monetary base in its attempt to weaken the Swiss franc via forex interventions and pegged rates, the SNB found itself confronted with the risk of increasing inflationary pressures that, if materialized, could jeopardize its credibility. To address these policy dilemmas – and reflecting the debate that is occurring in the international central banking community – the SNB became particularly concerned about the upward pressures that were mounting in the domestic financial sector next to those in the price level. Appealing to the international debate on the limitations of the use of the short-term interest rate, the SNB also addressed the incompatibility between the interest rate and the exchange rate by resorting to MPR measures to dampen the strong growth in credit volumes.

SNB behavior thus sheds light on the influence that the terms of the debate in the international central banking community are likely to exert on central banks as they engage in domestic monetary

management. Because central bankers are steeped in a culture that values technical, transnational knowledge and are more insulated from societal pressures than elected policymakers are, one of the most important drivers behind the strategies they select to cope with specific problems is represented by the climate of economic opinion that prevails in the community to which they belong and that justifies their choices in light of evolving economic lessons and peer approval. Comparing contemporary events with the events of the late 1970s, when the SNB confronted the similar challenge of an appreciating Swiss franc, provides further support for this argument. Indeed, although the SNB decided in 1978 – as it has now – to pursue the same policy objective of explicitly targeting the exchange rate, the SNB interpreted the problems deriving from its exchange rate policy differently in the late 1970s and focused almost exclusively on the challenges for price stability in a reflection of the monetary orthodoxy that dominated the central banking community of the time. The comparative dimension can also be applied to todays' circumstances. Switzerland is not the only country that has had to cope with an appreciating currency following the capital volatility triggered by the global financial crisis. Future research is required to ascertain whether central banks in different countries also managed the macroeconomic and reputational consequences of their exchange rate policies in a manner that reflects the tenets of the international monetary debate. In this respect, comparing advanced economies and emerging markets is an important line of future research.

Endnotes

i The situation is different at the time of writing. In particular, the 2013 May announcement of the potential tapering of the US Fed asset purchase program triggered downward pressures on a number of emerging market currencies, most notably on the Indian rupee.

ii Focusing on a case of currency appreciation, this paper complements analyses of policymakers' responses to pressures toward depreciation See, for instance, Walter and Willett (2010).

iii The observation that advanced economies have ended official interventions is not meant to suggest that these countries never intervene in the forex markets to affect the exchange rate. Research has found that central banks in floating markets intervene under a fairly consistent set of conditions (Almekinders and Eijffinger, 1996; Edison, 1993). Intervention has, for example, often been deployed to counter disordered markets by leaning against short-term fluctuations such as those triggered by large capital inflows.

iv Whereas a central bank has a finite stock of international reserves to defend its currency against downward pressures, central banks can intervene indefinitely in forex markets to resist currency appreciation (at least in principle) because there is no limit to the volume of domestic currency they can print to be sold in forex markets.

v In particular, sterilization leads to an increase in the differential between the interest rate on domestic government debt and international reserves, which creates a quasi-fiscal deficit. Furthermore, by preventing a decrease in the interest rate differential, sterilization does not eliminate the incentive for capital inflows to continue (c.f. Calvo, Leiderman and Reinhart, 1993: 147).

[vi] Although the risk of deflation was the main driver of the SNB actions (as discussed below), inflation was still an important challenge for domestic macroeconomic management, particularly because managing the intervention requires determining the exact moment the monetary base must be normalized before damaging the export sector.

[vii] In the Swiss case, exchange rate policy is the responsibility of the SNB and not of the federal government. This is different from what occurs in the United States (US) for instance, where exchange rate policy decisions are made by the Treasury and then enacted by the central bank.

[viii] On the emergence of the pre-crisis consensus see, for instance, Goodfriend (2007).

[ix] Among advanced economies, the US and Japan have been notable exceptions to the trend toward inflation targeting. As for the ECB, although this central bank adopts a numerical inflation objective of below, but close to, 2% over the medium term, it does not claim to be an inflation targeter.

[x] Opinions diverge about the extent to which monetary policy contributed to the build-up of pre-crisis imbalances. For opposing view see, for instance, Ahrend et al (2008) and Bernanke (2007).

[xi] IMF Conference on Rethinking Macro Policy II: First Steps and Early Lessons, Washington, D.C., 16-17 April 2013.

[xii] On the process through which these previously marginalized arguments gained the upper hand in the financial regulatory debate, see Baker (2012).

[xiii] As has been widely documented elsewhere (e.g. Baker 2012), it was exactly because the pre-crisis prevailing consensus largely ignored financial stability that the BIS suggestions fell on deaf ears. To put it differently, the pre-crisis monetary consensus was solid to the point that it made central bankers unreceptive to the warnings on the risks that were mounting in the financial sector.

[xiv] As clarified above, although the SNB does not consider itself to be "pure" as an inflation targeter, it has nonetheless incorporated key features of that framework, including a numerical definition of price stability.

[xv] Although exchange rate policy is part of the central bank's monetary function because of its effects on price and interest rates, it is standard practice to study the two functions separately.

[xvi] In the pursuit of its functions, the Swiss Federal Constitution grants the SNB operational independence. As a counterweight to this independence, the SNB has a duty of accountability; it must report regularly to the government and the general public on monetary policy matters.

[xvii] The Swiss franc depreciated 5% against the euro in the six days that followed the March 2009 announcement of the forex interventions.

[xviii] Communication of the Swiss National Bank, Swiss National Bank sets minimum exchange rate at CHF 1.20 per euro, 6 September 2011.

[xix] As reported by Bloomberg, RBA's Stevens Calls Switzerland's Aussie Purchases 'Remarkable', by Michael Heath, 24 August 2012.

[xx] Swissinfoch.com, SNB toughens stance with euro rate target, by Jessica Dacey, 6 September 2011Avaialble at http://www.swissinfo.ch/eng/specials/swiss_franc/SNB_toughens_stance_with_euro_rate_target.html?cid=31070180.

[xxi] In particular, in 2008, the banking sector contributed 7.6% of the Swiss GDP, whereas the insurance industry contributed 4% of GDP.

[xxii] The CCB was formally adopted by the Federal Council based on working group recommendations from the Federal Department of Finance, which also has representatives of the Swiss Financial Market Supervisory Authority and the SNB among its members.

[xxiii] In addition to the CCB, in June 2012, the Federal Council announced set of measures that included more stringent requirements for residential mortgage lending (i.e. an increase in the risk-weighting for the loan tranche exceeding the 80% loan-to-value ratio). A revision of the banking industry's self-regulation guidelines was also adopted.

[xxiv] For an accessible account of the 1978-1981 events, see Kugler and Rich (2001).

[xxv] The monetary base increased by 17% from September 1978 to March 1979 (Kohli and Rich, 1986: 923)

[xxvi] Since 1975, the SNB has set targets for annual growth in the money stock (M1) within the framework of a monetary policy whose main objective was that of achieving price stability.

[xxvii] For an easily accessible review of the economics literature behind this thinking, see, for instance, Roberts, 2010: Ch. 2.

[xxviii] However, by contrast to current events, in the 1970s, restrictions on inflows of foreign capital were also used to stem the appreciation of the Swiss franc.

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